

Unloading Strykers
from C-17.



U.S. Air Force (Jim Varyog)

The Army and Land Warfare: Transforming the Legions

By ANDREW F. KREPINEVICH, JR.

For over a century the Army was largely a territorial force committed to homeland defense. That changed between the Spanish-American War and World War II as it became an expeditionary force and the Nation moved to reconcile isolationist tendencies with its growing great power status. After 1945 the service became primarily a frontier force that supported the strategy of containment, which relied on forward

deployment in Europe and Asia. With the end of the Cold War, the Army encountered geopolitical changes coinciding with the rise of regional powers and militant Islam. These events are accompanied by military transformation that emphasizes expeditionary operations while exploiting capabilities emerging from the revolution in military affairs.

The Army is pursuing a three-track approach to military transformation. The first involves sustaining and modernizing a significant portion of the so-called legacy force. Its capabilities are dominated by heavy mechanized units that deterred aggression

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Practicing water insertion from CH-47.



U.S. Army (Don Sullivan)

while forward deployed in Europe and South Korea and routed the Iraqi army. The second and third tracks are directed at fielding an expeditionary army. The centerpiece of the second is an interim force of Stryker brigade

identifying the need to transform is one thing; effecting military transformation is another

combat teams (SBCTs), rapidly deployable medium-weight units with more punch than light formations such as light infantry and airborne divisions, though not as heavy and logistic-intensive as armored and mechanized infantry divisions. These teams serve as a bridge to the Objective Force, the third track, which is intended to incorporate SBCT mobility, deployability, and sustainability with the lethality and survivability of heavy formations.

For more than a decade there has been a spirited debate over the existence of a fundamental change in the nature of warfare—a revolution in military affairs. That controversy not only reflects the growth and rapid diffusion of military-related technology, but uncertainty over its ultimate impact. Like the dramatic advances in mechaniza-

tion, aviation, and radio which changed the military in the interwar years, the Army must interpret and exploit information and information-related technology as well as precision-strike weapon systems to engage targets over a wide area with greater lethality, precision, discrimination, and speed.

Despite the implicit uncertainty of predicting military competition over the next ten to fifteen years, the Armed Forces appear to have made three assumptions with respect to land warfare.

- Missile/anti-missile competition will continue to favor the offense, and identifying and defeating critical mobile (ballistic and cruise missile) targets will remain difficult; thus deploying and sustaining forces through major ports and air bases will be increasingly risky.

- Sanctuaries such as cities, complex terrain, and underground facilities will become more important as enemies strive to avoid open battles that heavily favor U.S. air and ground forces.

- Highly distributed, networked operations are possible.

Transformation Strategy

Identifying the need to transform is one thing; effecting military transformation is another. Organizations that have successfully transformed benefited from a clear statement of the

disparity between the post-transformation conflict environment and pre-transformation conditions. Current vision statements are regrettably not very compelling. *Joint Vision 2010* and *Joint Vision 2020* have addressed the need to achieve positional advantage over an enemy (dominant maneuver), engage an enemy effectively (precision engagement), support such efforts efficiently and effectively (focused logistics), and defend friendly forces (full-dimensional protection). Although desirable qualities, they offer little guidance on changes in missions and military competition. Indeed, effective maneuver, engagement, logistics, and protection would be qualities desired by any military in any era.

Nonetheless, the Army is arguably the most aggressive service in pursuing transformation. Documents like *Concepts for the Objective Force* envision a number of characteristics common to transformed land warfare:

- Operations will shift from linear to nonlinear.
- Formations will operate in more dispersed ways.
- Operations will be conducted at a higher tempo, leading to greater reliance on speed of mobilization and deployment and in combat operations themselves.
- Advanced information technologies will enable ground forces to violate the principle of mass to better protect themselves by dispersion, while losing little of their ability to coordinate or mass combat capability.
- Although close combat will remain a key element in land warfare, advanced information capabilities and munitions will enable ground forces to conduct decisive engagements at far greater ranges.
- Ground operations will be more dependent on maritime and air forces—in short, land warfare will become even more of a joint operation.
- The spectrum of land combat will become blurred, with various forms of warfare merging, requiring unprecedented flexibility from land forces.

According to this white paper, "In contrast to the phased, attrition-based, linear operations of the past," transformed operations focus on disrupting battle plans "by exposing the entire enemy force to air/ground attack,

Rangers jumping into the future.



U.S. Air Force (Randy White)

rather than rolling [its] forces up sequentially." The Army intends to employ superior information and the ability to strike at extended ranges not only for nonlinear operations (fires covering gaps between formations), but to fight at extended ranges. This places demands on forces that are capable of locating an enemy at long ranges, relaying that information quickly, and coordinating strikes at long range.

Traditional land warfare has Army units closing with and destroying enemies, which means winning the close battle by fighting in the trenches. But imagine a blindfolded pugilist who cannot see the opponent. Assume further that the opponent had an advantage in reach and could incapacitate the other boxer with one blow. That situation describes Army formations

that see an enemy before being seen, strike without being detected, and employ precision fires as an initial knock-out punch. Under these circumstances, the Army would logically seek decisive engagement at extended range.

Transformation plans call for six Stryker brigade combat teams as an interim force, with the first brigade to be fielded in the near term. The Army intends to buy two thousand Strykers to serve as the primary SBCT combat vehicle. The principal program requirements are that the vehicle must be transportable on C-130s, carry a nine-member infantry or engineer squad and crew of two, have communications interoperability among ten interim armored vehicle variants, and mount a 105mm cannon capable of destroying bunkers.

The Stryker comes in two basic types: a mobile gun system and infantry carrier—the latter in eight configurations, including command, reconnaissance, and nuclear, biological, and chemical detection. The first SBCT, however, will have three substitute vehicles because mobile guns, NBC reconnaissance, and fire support systems will not be available in 2005. SBCTs will also be fielded with line-of-sight antitank missiles, tactical unmanned aerial vehicles, digital communication, high-mobility artillery rockets, lightweight howitzers, and smart mortar rounds.

At present the Objective Force is only a concept. Although the Stryker is central to SBCTs, the future combat system is the core of that force. Variants of this capability will combine the characteristics of howitzers, main battle tanks, and infantry fighting vehicles, while exceeding their lethality and survivability and weighing approximately 20 tons (compared to the 19-ton Stryker). In addition to the future combat system, the Objective Force will comprise a networked, combined-arms team with manned and unmanned ground systems and unmanned aerial vehicles (UAVs). Once the system proves itself, it will be adopted by the legacy and interim forces, which will be merged in the Objective Force. The Army is pursuing an aggressive—some might say risky—plan to bring the future combat system to the development/demonstration



TSC, Fort Lewis (Mike Callum)

phase in FY06, production during FY08, and fielding by FY10.

Like the Stryker, the future combat system must be transportable in C-130-type aircraft. Its design parameters will also compel a fundamental shift by the Army in the conduct of operations, particularly in the armor community. Mandating a 70 percent

the Objective Force will use UAVs and robotics to conduct beyond-line-of-sight reconnaissance and surveillance

reduction in weight from the Abrams tank and 50 percent less internal volume (300–400 cubic feet) to fit aboard C-130s reverses a trend toward bigger and heavier ground combat vehicles. Such a radical weight loss will require basing survivability not on armor plating, but on locating an enemy first at extended ranges and striking with a

precision first-round kill. While revolutionary, this concept is also unproven.

Risk also characterizes the first-generation direct-fire variant of the future combat system, which is expected to defeat main battle tanks and to be as lethal as the Abrams. Rapid deployment timelines for the Objective Force have driven the demand for radical

weight reductions in the future combat system relative to the current Abrams tank. At some point, reducing unit weight will in-

evitably lead to reduced lethality (fewer munitions), survivability (less armor), and so forth. This suggests that everything cannot be a force design priority—there must be tradeoffs.

Aside from the future combat system, the Objective Force will depend heavily on information-intensive systems, including command, control, communications, computers, intelligence, surveillance, and reconnaissance architectures, robotic ground vehicles, and various sensors. The force

will use UAVs and robotics to conduct beyond-line-of-sight reconnaissance and surveillance. But it is unclear that these capabilities will be available within the ambitious timelines the Army has set for fielding Objective Force units. In addition, a key element in the operational concept that underlies the force is the Comanche, a troubled helicopter whose production run has been halved. Yet this aircraft has been called the “quarterback of whatever we see offensively in terms of deep-armed reconnaissance [and] armed escort for ground forces.”¹

Barriers to Transformation

A range of hurdles challenges transformation. Some are discussed below. Others, such as limitations on technological progress, shortfalls in human and material resources, and unwarranted assumptions concerning the ability and willingness of other services to support the transformation of the Army, remain to be considered elsewhere.

AH-64 during live fire exercise, Kosovo.



551 Signal Company (Michelle Labrie)

According to *Concepts for the Objective Force*, the Army goal is deploying "a brigade combat team anywhere in the world in 96 hours after liftoff, a division on the ground in 120 hours, and five divisions in theater in 30 days. This will drive system and capability parameters." While this requirement suggests a major redesign of maneuver formations, there is no compelling basis for this principal force design metric. There is a case for a rapidly deployable expeditionary force, but why a brigade in 96 hours? The Army must make difficult trade-offs in its design parameters (force lethality, mobility, and sustainability) to meet these extremely demanding and seemingly arbitrary deployment timelines. One has only to look at the SBCT design to discover potentially pernicious effects of an overwhelming emphasis on a single-force performance metric. These brigades are bereft of organic logistic support, self-propelled artillery, and organic air assets.

Research confirms that the deployment timelines are overly ambitious. An Army study determined that it would take 12.7 days to move one SBCT to Kosovo from Fort Lewis, using nearby McChord Air Force Base. If facilities at the Pristina airfield were improved to handle all-weather, round-the-clock operations, and if the throughput of air bases en route was

doubled, and if maximum use were made of commercial aircraft, deployment could be achieved in 7.5 days, almost twice the target time of 96 hours. According to an analysis by Boeing, which manufactures C-17 cargo aircraft, deploying one SBCT in 96 hours would require between 103 and 168 C-17s dedicated solely to that mission, and assuming that the aircraft fly at greater than normal mission completion success rates.

Despite attempts to prioritize force design around C-130s, the Army may not have come to grips with the limits imposed on the designs of both SBCTs and the Objective Force. Forces could possibly be deployed to intermediate staging bases on C-17s, then inserted into a theater by intra-theater lift such as C-130s. However, there is the issue of transloading SBCT/Objective Force equipment to C-130s, which inflicts further delay. Moreover, the 2,800-mile range of C-130s implies a maximum ingress and egress route from intermediate staging bases of 1,400 miles each. But it appears possible—indeed likely—that in the not distant future, enemies could deploy ballistic missiles with ranges exceeding 1,400 miles, placing staging bases at risk.

There also have been problems with the weight of the Stryker with respect to C-130 transportability. While

most variants have been granted waivers for the aircraft, the Stryker mobile gun system still presents problems. Of course, its borderline weight will also significantly reduce C-130 operational range, further complicating deployment options. This situation may be worse for the future combat system, which is intended to be nearly as light as the Stryker. Based on these factors, Military Traffic Management Command has concluded that "if maximum transportation flexibility [is] to be of paramount importance, the maximum C-130 air transport weight of future vehicles should be in the 29,000–32,000 pound [14.5–16 ton] range. These weights ideally would include the crew, 3/4-tank of fuel, and full ammunition, armor, and equipment."² Both the Stryker and future combat system significantly exceed these limits.

Urban Warfare

An increasingly likely contingency for the Army is urban operations. Not only will enemy forces have more incentive to fight in cities to avoid open battle with a stronger military, but there will be more urban terrain in which to seek sanctuary. Two pillars of American dominance—air superiority and systems-derived intelligence—are vastly degraded in urban terrain. The value of superiority in signals intelligence is greatly reduced, as enemies can communicate with non-traditional means such as runners. Air strikes and other forms of bombardment, even precision munitions, have greater limitations in an urban environment, where enemies can be located among civilians or near targets that are difficult to engage, such as hospitals and religious sites. Tactical human intelligence is key in providing extremely specialized information needed to operate on the urban battlefield—from the direction doors open and the utility portals in the sewer systems to the disposition of enemy regular and irregular forces. But human intelligence is not a U.S. strength.

The Army is attempting to structure and train SBCTs with urban warfare in mind, with half of collective

High mobility artillery rocket system.



55th Signal Company (Russell J. Good)

training explicitly dealing with such operations. The base unit for both SBCT and the Objective Force is combined arms mechanized/motorized infantry—the traditional type of infantry-heavy team employed in urban areas for house-to-house fighting. But serious questions remain concerning

military transformation places great value on maintaining hedges against uncertain outcomes

the suitability of the structure of SBCT and the successor Objective Force for urban warfare. Both forces are based on the vision of "see first, understand first, act first, and finish decisively." In urban operations, however, it seems likely the local inhabitants or occupying enemy forces will have a better picture of the environment than Army forces which arrive after the fact.

A Brief Tenure

Dramatic change in large military organizations usually spans a decade or more. However, the institutional practices of the Armed Forces typically rotate leaders out of assignments every three or four years. This cycle may suffice for officers whose responsibilities

are near term, such as combatant commanders with immediate warfighting missions in their areas of operation. It is less desirable where they are tasked with effecting military transformation.

Experience indicates that organizations that have successfully transformed have usually had a few senior leaders—who understood the new environment and bringing about change in complex organizations—serve for double or triple the length of time of typical general officers. In contrast, General Erik Shinseki who is Chief of Staff, U.S. Army, laid out his vision for transformation in October 1999, aware that his tenure would probably be four years.

However, military transformation is a long-term process that places great value on maintaining hedges against uncertain geopolitical and military-technical outcomes. These hedges must balance concern that, while options remain open, it is easier for an organization to retain existing ways of doing business. Enemies of change believe they can outlast the tenure of the leaders who champion transformation. By locking in many Objective Force characteristics, Shinseki sacrificed keeping options alive downstream in favor of committing the Army to a certain path, making it more difficult to

reverse course. In short, he appears reluctant to entrust his vision for transformation to his successors.

Modernization Strategy

Military revolutions are usually characterized by an increased risk of strategic surprise, like submarine warfare in World War I. Yet even systems placed on a fast track often take ten years or more to be fielded.

Considerable time is needed to reach the best decisions on new systems and force structure. Given these considerations, Army leaders must adopt a different modernization strategy to achieve the goal of dominating military operations over the conflict spectrum in the long term. The service must emphasize wildcatting—experimenting with a limited but operationally significant number of various systems, as well as operational concepts and force structures. Successful modernization is generally not restricted to a single option. Premature selection of key systems may produce a fortunate outcome if the Army guesses right. However, committing to a single-point solution in an uncertain world may prove devastating should the guess turn out to be wrong.

It is also important to avoid false starts and dead ends. The former are systems deployed before the technology surrounding them matures. The 2,000 Strykers could represent an expensive false start because the Army believes that a more capable system—the future combat system—can be fielded to eclipse it. Dead ends are capabilities that appear promising, even revolutionary, but fail to meet expectations. The challenge is not to escape acquiring dead-end systems too early; it is to not buy them at all. For example, if the Pentagon does not make breakthroughs in missile defense or operational concepts that govern their employment within the planning horizon considered here, fielding ballistic missile defense systems such as the theater high-altitude air defense system could represent dead-end investments for the Army.

Several documents, concepts, and systems guide Army transformation efforts. *The Army Vision: Soldiers on Point for the Nation—Persuasive in Peace, Invincible in War* (October 1999) provides the foundation. According to this statement, the service will realize "strategic dominance across the entire spectrum of operations" with forces that are "responsive, deployable, agile, versatile, lethal, survivable, and sustainable." Rapid deployment goals will drive system and capability parameters. More specifically, the Army "will develop the capability to put combat force anywhere in the world in 96 hours after liftoff—in brigade combat teams for both stability and support operations and for warfighting" and be able to generate "a warfighting division on the ground in 120 hours and five divisions in 30 days." Airlift, particularly C-17s and C-130s, are the only means currently capable of supporting the goals for deployment into theater; in the future, other modes of rapid deployment such as the high-speed vessel or lighter-than-air transports may be developed.

To achieve this vision, the Army is proceeding with the Legacy Force, Interim Force, and Objective Force. The Legacy Force guarantees near-term warfighting readiness and is comprised of current units and equipment. The Interim Force is designed to fill the near-term capabilities gap as the Army transitions from the Legacy Force to the Objective Force. It seeks to combine the best characteristics of current forces—heavy, light, and Special Operations Forces—and leverage state-of-the-art technologies. In November 2000, a family of 19 ton-class wheeled vehicles built by General Motors and General Dynamics Land Systems was selected as the armored vehicle for the Interim Force. The vehicle is named the Stryker and the unit of action designated the Stryker brigade combat team (SBCT). The Army has allocated over \$6.4 billion through fiscal year 2007 to field six SBCTs; the first is expected to reach initial operating capability in 2003.

The *Army Transformation Roadmap* describes the *Future Combat System* (FCS), which is the centerpiece of the Objective Force. FCS is "a joint and combined arms interoperable, 20-ton-class, rapidly deployable, networked system-of-systems with manned and unmanned aerial and ground platforms, direct and indirect fires, air defense, intelligence, reconnaissance, surveillance, and embedded battle command on the move." In March 2002, a Boeing-Science Applications International Corporation team was named lead systems integrator for FCS; the Army plans to complete the development and demonstration phase of FCS acquisition by 2006 and field the first Objective Force unit in 2008.

For details, see: www.army.mil/vision/; www.objectiveforce.army.mil; and www.army.mil/vision/Transformation_Roadmap.pdf.

JFQ

level. Yet it is often the warfighting concept on the operational level that can inform tactics. A second concern is the ability of the Army to determine the viability of its operational concept for Objective Force, in which information architectures play a major role.

Finally, the Army lacks adequate facilities for urban warfare training. Despite some improvements, few have live-fire capability. Moreover, most training is done on the small-unit level, and little is performed as a combined-arms exercise, let alone with other services or nations. The Army lacks an organic capability to hone aerial integration under realistic conditions. Operations in Mogadishu, Jenin, and Grozny have shown, and Iraq may prove, that the Armed Forces need a joint urban warfare training center.

Various issues deserve further attention. A point of departure would be assessing how to modify the operational concept and structure of the Objective Force to reduce risks, while enabling the Army to meet the threat that first stimulated transformation. Whenever risks cannot be reduced, opportunities to develop strong hedges can be explored. Despite some formidable problems, there is cause for optimism. The Army has identified the requirement for transformation and advanced compelling reasons to support it. It initiated the process before potential threats became severe enough to jeopardize the ability to conduct land warfare at acceptable costs. Put another way, the Army has time to adjust its strategy for military transformation to enhance prospects for success and mitigate the consequences of any shortcomings.

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Field exercises are also beneficial in times of high uncertainty and rapid change. They provide opportunities—as close to actual combat as possible—to assess the merits of warfighting concepts and capabilities. During the Cold War, the military invested in high-fidelity facilities that enhanced field training. For example, the National Training Center at Fort Irwin prepared brigade-size units for combined arms mechanized warfare against a Soviet threat. Yet comparable

facilities to support joint exercises focused on anti-access/area-denial threats, as raised in the Quadrennial Defense Review, do not exist. A joint national training center is needed for transformation exercises.

Several concerns arise from the absence of facilities to support exercises that prepare joint forces for challenges on the operational level. One is promoting training on the tactical

NOTES

¹ Ann Roosevelt, "Comanche Helicopter Still Top Army Program Despite Problems," *Defense Week* (March 4, 2002), p. 6.

² Joseph F. Cassidy, *C-130 Transportability of Army Vehicles* (Newport News, Va.: Military Traffic Management Command, Transportation Engineering Agency, 2001), p. 13.